

TELEPHONE WIRE DISTRIBUTION CENTER

Background of the Invention

Field of the Invention

This invention relates generally to connector panels for coupling incoming paired telephone
5 wires to wires running to various locations in a house or other type of building.

Related Art

In order to comply with a new telephone industry standard called Category 5, residential
homes must be wired with four paired telephone lines coming into the residence. Category 5 also
requires a separate dedicated pair of wires for every telephone jack in a house.

Under previous standards, telephone jacks could be looped in series requiring significantly
fewer wires at the telephone wire distribution panel or center, which is typically located in the
basement of a house. A block of paired series connectors has often been used to connect an
incoming paired telephone line to several telephone jacks in various locations throughout a house.
A significant shortcoming of this approach is that telephone wires leading to different rooms in a
house often remain unlabeled and generally disorganized, causing unnecessary time and effort to be
expended whenever the paired telephone wire leading to a particular telephone jack in a particular
location of a house needs to be identified, disconnected from an input line, and/ connected to a
second input line instead. In order to change a telephone jack from one input line to another, after
identifying the line or lines leading to the telephone jack of interest, the wires will typically need to
be un-bundled so that the output wire can be connected to an input wire located elsewhere in the
block of connectors.

In light of the requirements of Category 5, namely, four input lines and a "home run," in other words, a separate dedicated paired wire, for each wired telephone jack, wiring a home according to Category 5's requirements presents an organizational challenge not previously addressed by prior art telephone wire distribution center. Accordingly, there is a need for a paired telephone wire distribution center for organizing input and output telephone wire pairs and labeling the location or room in a house to which an output paired telephone wire is run. Such a distribution center should facilitate organizing, labeling, identification, and the ability to readily switch a particular output wire pair from a particular input pair to any of the other input wire pairs. An additional practical consideration is that such a distribution center should be inexpensive to manufacture because the individuals who run telephone wire in homes typically are very cost conscious.

Summary of the Invention

Accordingly, it is an object of this invention to provide a cost-effective apparatus and method for coupling one or more paired input telephone wires to one or more paired output telephone wires while facilitating: organizing, labeling, identification, and switching a particular output wire pair from a particular input pair to any of the other input wire pairs.

A telephone distribution center for organizing and coupling multiple paired input telephone wires to multiple output telephone wires is disclosed. Paired input lines may be coupled to respective pairs of punch down terminal strips. Each punch down terminal strip may include an electrically conductive terminal strip inserted into a row of insulation displacing punch down

connectors. Multiple paired output lines may be coupled to one or more punch down terminal strip pairs thereby coupling one or more paired output lines to the desired input line pair or pairs. A convenient place is provided for labeling the location of the telephone jack to which each paired output wire leads. A wire channel, wire channel hooks, and tie wire loops are provided for
5 organizing paired input and output telephone wires. Mounting holes are also provided for fastening the telephone wire distribution center to a wall or other suitable mounting surface.

Brief Description of the Drawings

FIG. 1 is an isometric view of a telephone wire distribution center in accordance with the principles of this invention.

FIG. 2 is an isometric view of a row of insulation displacing punch down connectors and an electrically conductive terminal strip.

FIG. 3 is a right side view of a punch down terminal strip comprising the electrically conductive terminal strip shown in FIG. 2 inserted into the row of insulation displacing punch down connectors shown in FIG. 2.

Detailed Description of the Preferred Embodiments

Referring to FIG. 1, a telephone wire distribution center 100 is shown. Distribution center 100 includes eight electrically conductive terminal strips 134-1, 134-2, 134-3, 134-4, 134-5, 134-6, 134-7, and 134-8 inserted into eight rows of insulation displacing punch down connectors 102, 104, 106, 108, 110, 112, 114, and 116 ("102-116"). Each row of insulation displacing punch down
20 connectors 102-116, includes a plurality of insulation displacing punch down connectors, such as

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for instance, punch down connectors 118-1 through 118-13. As will be apparent, any other suitable number of punch down connectors could also be used for a particular row of punch down connectors.

To use distribution center 100 to connect one or more input telephone wire pairs to one or more output telephone wire pairs for distribution to multiple rooms throughout a house, a first wire of a first input wire pair (not shown) would typically be electrically connected to a terminal strip, such as terminal strip 134-1, for instance. Such a connection could be made by inserting an insulated wire into punch down connector 118-1, for instance. Punch down connectors 118-1 through 118-13 are preferably insulation displacing connectors, which are well known in the art and automatically strip the insulation from a wire so that the wire becomes electrically coupled to terminal strip 134-1. Similarly, the second wire of the first wire pair could be electrically coupled to terminal strip 134-2 via punch down connector 120-1. Once both paired wires of the first pair are connected to terminal strips 134-1 and 134-2 as just described, 12 pairs of output wires can be electrically coupled to the first paired input wire using punch down connectors 118-2 through 118-13 and the corresponding punchdown terminals in row 104, reference numbers for which have been omitted from FIG. 1 in an attempt to keep FIG. 1 as uncluttered as possible.

Second, third, and fourth paired input wires could also be electrically coupled to terminal strips 134-3 and 134-4; 134-5 and 134-6; and 134-7 and 134-8, respectively, in an analogous manner so that: terminal strip 134-3 is electrically coupled to the first wire of the second paired input wire; terminal strip 134-4 is electrically coupled to the second wire of the second paired input wire; terminal strip 134-5 is electrically coupled to the first wire of the third paired input wire; terminal strip 134-6 is electrically coupled to the second wire of the third paired input wire; terminal strip

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134-7 is electrically coupled to the first wire of the fourth paired input wire; and terminal strip 134-8 is electrically coupled to the second wire of the fourth paired input wire.

The four input wires could be routed through channel 136, which separates rows 102, 104, 106, and 108 from rows 110, 112, 114, and 116. Channel 136 may include wire channel hooks, such as wire channel hook 138 for retaining input and output wire pairs neatly and in an organized manner within channel 136. Cable tie mounting loops such as, for instance mounting loop 140 could be provided in order to facilitate bundling of input and/or output wire pairs to the front surface 142 of the distribution center 100.

While input wire pairs are generally organized horizontally, in other words, along the direction indicated by double-headed arrow 144, with first through fourth input wire pairs being electrically coupled to terminals strip pairs 134-1/134-2, 134-3/134-4, 134-5/134-6, and 134-7/134-8, output wire pairs are generally organized vertically, in other words, in the direction of double-headed arrow 146. For instance, the first paired input wire, also referred to as line 1, is coupled in series to each insulation displacing terminal connector 118-1 through 118-13. Accordingly, label area 148-1 provides space for a label such as master bedroom, or kitchen, or the like. A paired output wire (not shown) could be connected to terminal connector 118-2 and the corresponding paired terminal connector of row 104 to connect the paired output wire leading to the bedroom to input line 1. To change the input line to which that paired output wire is coupled, the output wire can simply be removed from the terminal connectors 118-2 and the corresponding paired terminal connector of row 104 and connected to a different pair of terminal connectors, for instance, a pair of connectors from rows 106 and 108 for line 2, a pair of connectors from rows 110 and 112 for line 3, or rows 114 and

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116 for line 4.

In a similar manner, additional paired output lines can be labeled using other labeling areas below labeling area 148-1 for paired output wires leading to other rooms or locations in a house. A paired output wire leading to a particular location can then subsequently be readily identified, uncoupled from a first input line, and coupled to a different input line much more efficiently than is possible with prior art telephone wire distribution centers. Each punch down connector row 102-116 is shown in the drawings having 13 punch down connectors per row. As will be apparent, other suitable numbers of connectors per row may be used as desired. Similarly, while four input lines are shown, other desired numbers of input lines may also be used as desired.

Mounting holes, such as, for instance, mounting hole 150, are provided for mounting telephone wire distribution center 100 to a wall or other suitable surface.

Referring to FIG. 2, punch down connector row 102 and terminal strip 134-1 are shown in more detail than in FIG. 1. Terminal strip 134-1 may be made of plated metal or any other suitable electrically conductive material. Terminal strip 134-1 includes a plurality of termination areas, such as termination area 200 for electrically coupling wires to terminal strip 134-1. Terminal strip 134-1 includes a plurality of diagonally upwardly projecting fingers, such as finger 202 for engaging an upper surface 300 (shown in dashed line in FIG. 3) of a groove, such as groove 204 in order to keep terminal strip 134-1 from being inadvertently removed from punch down connector row 102 once terminal strip 134-1 has been inserted into punch down connector row 102.

As will be apparent to those of ordinary skill in the art, telephone distribution center 100 and punch down connector rows 102, 104, 106, 108, 110, 112, 114, and 116 may be made of plastic or

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any other suitable electrically non-conductive material using stereolithography or any other suitable process for forming these components. Several of such processes are well known in the art.

This invention has been described with reference to certain preferred embodiments. Modifications may occur to others upon reading and understanding the foregoing detailed description. This invention includes all such modifications to the extent that they come within the scope of the appended claims or their equivalents.

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